

## CLAIMS

1. A formulation for use in the treatment of corrosion and metal sulphide scale deposits in aqueous systems, said formulation comprising a  
5 THP<sup>+</sup> salt (as hereinbefore defined) and a thio-substituted compound.
2. A formulation as claimed in Claim 1 in which the metal sulphide scale is iron sulphide.
- 10 3. A formulation as claimed in Claim 1 in which the metal sulphide scale is lead sulphide.
4. A formulation as claimed in Claim 1 in which the metal sulphide scale is zinc sulphide.
- 15 5. A formulation as claimed in any one of the preceding claims in which the THP<sup>+</sup> salt comprises an anion selected from the group consisting of sulphate, chloride, phosphate, bromide, fluoride, carbonate, citrate, lactate, tartrate, borate, silicate, formate and acetate.
- 20 6. A formulation as claimed in any one of Claims 1 to 5 in which the thio-substituted compound is selected from the group consisting of thio-substituted carboxylic acids or salts; thio-substituted sulphonic acids; substituted and unsubstituted alkyl and aryl thiols; thio-substituted  
25 heterocyclic compounds; and mercaptoethanols.
7. A formulation as claimed in Claim 6 in which the thio-substituted compound is thioglycollic acid.
- 30 8. A formulation as claimed in any one of the preceding claims in which said formulation further includes a surfactant.

9. A formulation as claimed in Claim 8 in which the surfactant is a cationic surfactant.

5 10. A formulation as claimed in Claim 9 in which the cationic surfactant is selected from the group consisting of quaternary ammonium compounds, N-alkylated heterocyclic compounds, quaternised amido-amines, and amino methane phosphonate.

10 11. A formulation as claimed in Claim 8 in which the surfactant is selected from the group consisting of anionic, amphoteric and non-ionic surfactants.

12. The use of a formulation as claimed in any one of the preceding  
15 claims for treating corrosion of mild steel, copper or aluminium.

13. A method for treatment of an aqueous system containing or in contact with a metal sulphide scale while concomitantly inhibiting the corrosion of surfaces in contact with said aqueous system, which method  
20 comprises the addition to said aqueous system of a scale and corrosion inhibiting amount of a formulation in accordance with any one of Claims 1 to 11.

14. A method according to Claim 13 in which the aqueous system is  
25 used in enhanced oil recovery.

15. A method as claimed in Claim 13 in which the aqueous system is used in industrial water systems.

30 16. A method as claimed in Claim 13 in which the aqueous system is used in paper manufacturing systems.

17. A formulation consisting essentially of the reaction product of a THP<sup>+</sup> salt (as hereinbefore defined) and a thio-substituted compound, wherein the ratio of said THP<sup>+</sup> salt and said thio-substituted compound is between 1:1 and 750:1.

18. A method as claimed in any one of Claims 13 to 16 in which the THP<sup>+</sup> salt is added to the aqueous system in an effective amount of up to 30% by weight.

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19. A formulation as claimed in any one of Claims 1 to 11 in which the ratio of the THP<sup>+</sup> salt to the thio-substituted compound is between 1:1 and 750:1.

20. A formulation substantially as described herein with reference to the accompanying example.

21. A method substantially as described herein with reference to the accompanying example.

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